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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/985,763

11/06/2001

Paul Kalapathy

108339-00097

4336

32294

7590

07/19/2006

SQUIRE, SANDERS & DEMPSEY L.L.P.

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8000 TOWERS CRESCENT

TYSONS CORNER, VA 22182

EXAMINER

CHO, HONG SOL

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 07/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/985,763	Applicant(s) KALAPATHY ET AL.	
	Examiner Hong Cho	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 June 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Amendment*

1. The following is in response to the amendments filed on 06/29/2006. Claims 1-25 are pending in the application.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(e) that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, 6-8, 10, 12, 13, 15-17, 19 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Michels et al (U.S. 6453358), hereinafter referred to as Michels.

Re claims 1, 7, 13, and 16, Michels discloses a search device including a primary memory (*a table of claims 1 and 13, a table means of claim 7, an address resolution (ARL) table of claim 16, figure 3, element 58*) with a lookup table (*having a plurality of*

*entries, column 5, lines 39-40), a stage 1 memory (a cache of claims 1 and 13, a cache means of claim 7, an ARL cache table of claim 16, figure 3, element 70) that does not contain the entire lookup table (having a subset of entries of said plurality of entries of the table, column 6, lines 5-10), and two binary search engines (a search engine of claim 1 and 16, a search engine means of claim 7, figure 3, elements 66 and 68). Two binary search engines (figure 3, elements 66 and 68) constitute a search engine. Michels discloses the first binary search engine (figure 3, element 66) connected to a stage 1 memory (figure 3, element 70) and the second binary search engine (figure 3, element 68) connected to a primary memory (figure 3, element 58) (a search engine is connected to the table of claim 1, the ARL table of claim 16 and the cache of claim 1 or the ARL cache table as in claim 16). The first binary search engine performs a predetermined number of iteration in searching a lookup table in stage 1 memory (a search engine configured to first search said cache or ARL cache table of claim 7) and the second binary search engine performs binary search on a lookup table in primary memory based on the results from the first binary search engine (and then search said table or ARL table of claim 7 based on search results of said cache, said search engine connected to said table and said cache, figure 3).*

Re claims 2, 8, and 17, Michels discloses a search engine with a first binary search engine (*a search stage zero segment, figure 3, element 66) connected to a stage 1 memory (cache, figure 3, element 70) and a second binary search engine (a search stage one segment, figure 3, element 68) connected to a primary memory (table, figure 3, element 58) (a search engine comprising a search stage zero segment configured to*

*search said cache in said first number of search cycles, said search stage zero segment connected to said cache, and a search stage one segment configured to search said table in a second number of search cycles based on search results of said cache, said search stage one segment connected to said search stage zero segment and said table, column 3, lines 9-16; figure 3; column 5, lines 33-36).*

Re claims 4, 6, 10, 12, 15, 19, and 21, Michels discloses that the first binary search engine performs the first eight iterations of the search and the second binary search engine performs the last eight iterations (column 6, lines 2-5, *the first number of search cycles used to search the cache is equal to the second number of search cycles used to search the table*).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3, 5, 9, 11, 14, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michels.

Re claims 3, 5, 9, 11, 14, 18, and 20, Michels discloses all of the limitations of the base claim, but fails to disclose that the first number of search cycles used to search the

cache is less than the second number of search cycles used to search the table. Since Michels suggests that the binary search engines can perform any number of iterations depending on the particular application (column 6, lines 22-26), it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the number of iterations to search a lookup table at each search engine so that it will take less time for the binary search engine to search a lookup table with 256 entries than searching a lookup table with 64000 entries.

Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michels in view of admitted prior art (APA).

Re claims 22-25, Michels discloses all of the limitations of the base claim, but fails to disclose embodiment of the table and search engine on a single substrate. APA discloses implementing various modules, interfaces, and tables onto a single semiconductor substrate (specification, paragraph [0055], lines 1-7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the configuration of Michels by embedding the table and search engine on a single substrate for the matter of architectural design choice.

#### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1- 21 have been considered but are not persuasive.

**Rejections under 35 U.S.C. 102(e)**

On page 12, applicant argues that Michels does not disclose a table having a plurality of entries, a table means for storing a plurality of entries, creating a table having a plurality of entries in a search device, and a search device comprising the search engine and the ARL table. In reply, refer to the rejection of claims 1, 7, 13 and 16.

On page 12, applicant further argues that Michels do not disclose a table search device by pointing out that a lookup table (primary memory, figure 3, element 58) is not part of a search device. In reply, Michels discloses a search device including two binary search engines (a search engine), stage 1 memory and primary memory. Refer to the rejection of claims 1, 7, 13 and 16.

**Rejections under 35 U.S.C. 103(a)**

On page 14, applicant argues that all the other examples in Michels show that the binary search engines share equal number of iterations. In reply, refer to the rejection of claims 3, 5, 9, 11, 14, 18, and 20.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

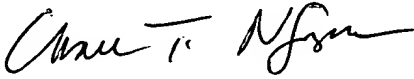
shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Cho whose telephone number is 571-272-3087. The examiner can normally be reached on Mon-Fri during 7 am to 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hong Cho  
Patent Examiner  
7/13/2006

  
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